



Recurrent Infection and Immune Deficiency

Recurrent infections can mean many things. They may be a normal part of early childhood, they may be occurring due to another medical condition, or more rarely they may reflect an underlying problem with the immune system.

Normal Recurrent Infections

At birth the child's own immune system is naive, meaning it has not previously come into contact with the enormous numbers of germs in our environment. The number of infections a child may catch over the first few years of life can seem extraordinary. For example a two-year-old may have an average of seven colds per year, some children may get ten to twelve per year. Cold symptoms can last up to eight days, with some lasting eighteen days. An ear infection may occur with up to one in four of their colds. It's easy to see why parents feel their children are sick all the time!

Not all children catch the same number of infections, and even within families there are many reasons contributing to all of this. Some of the reasons are environmental, such as:

Human Contacts. Children with lots of contact with other children will generally catch more infections.

Passive Smoke. Children born to mothers who smoked during pregnancy may have more chest infections in early childhood. Living in a home with smoke exposure is also associated with more respiratory infections in young children.

Nutrition. Breast feeding gives some protection from respiratory and gastrointestinal infections early on.

There are also individual factors that may influence why one child catches more than their fair share of infections such as:

Age. Some infections are much more common at some ages, such as bronchiolitis in children under 1 year.

Prematurity. Some infants born early are more likely to have problems with infections, especially over the first year of life.

Allergy. Hayfever and rhinitis increase problems with ear infections and sinusitis, while eczema increases problems with skin infections.

Other. Re-current infections due to other medical conditions such as chronic chest or kidney disease may also occur.

The Normal Immune System

The immune system is a complex system of cells and chemicals that work together to protect us from the innumerable germs in our environment.

Main components of the immune system are:

Antibodies. Proteins made to mop up toxins or germs so that other parts of the immune system can destroy the germ/toxin.

T cells. Important cells that have a role in killing cells that have become infected by germs, but can also act as the conductor for the rest of the immune system.

Macrophages. These are a number of types of cells whose job it is to eat and kill germs.

Complement. Complement is a system that makes little pores in some bugs to kill them, and also generates inflammation in response to infection.

Any part of the immune system can be deficient, and the types of infection problems a person gets will depend on which part doesn't work.

For example, antibody problems are common immune deficiencies, and the most common infections seen if there is an antibody problem are bacterial infections of the sinuses, ears, and chest. In contrast if the T cells don't work properly a person is at risk of infections with bacteria, viruses, fungi, and protozoa.

Immune Deficiency and Recurrent Infection

A recurrent infection can be an important warning sign that the immune system is not working properly. But it is important to realise that recurrent infection does not mean that there is an immune deficiency, and most people who meet some of the warning signs will not have a problem with their immune system. Infections affecting infants are particularly important as serious immune deficiencies usually become apparent during the first few years of life. Persistent fungal infections of the skin or mouth, prolonged diarrhoea, or persistent cough, are signs that need reviewing and consideration of an immune problem. Infections not suggestive of an underlying immune problem include recurrent colds or strep throat infections.

Blood tests, and the evaluation of the immune system include:

Medical History. The details of the infection, frequency, severity, and complications. Patients with immune deficiency are more likely to develop infections inside the body, for example, in the lungs, bones, joints, liver, heart or brain.

Sometimes an unusual germ is enough to suggest an immune deficiency.

Family History. Immune deficiencies are often inherited so details of previous similar problems within the extended family are vital.

Examination. Including looking for signs of chronic infection or other conditions that may cause recurrent infections.

Clinical situation (age, frequency, infection history, and findings on the examination) may require a simple screening for possible immune deficiency may be undertaken in general practice or referral to a specialist arranged.

Treatment

If an immune deficiency is diagnosed, then specific treatment will usually be required, aiming to prevent ongoing recurrent infections and other complications. This may involve regular medications, avoiding particular vaccinations, or treatment with antibody infusions (IVIG).

At times the immune deficiency will be severe enough to require the patient to be kept in a protected environment to try and prevent exposure to germs.

For the majority of people with recurrent infections there will not be underlying immune deficiency to diagnose. Other factors that may be contributing to recurrent infections should be addressed, such as avoiding exposure to passive smoking and managing the underlying allergy. Normal recurrent infections will become less problematic with age as the immune system matures and develops memory of previous infections.

The Warning signs of PID have been developed to help alert patients and medical practitioners to consider the possibility of these rare Immune Deficiency disorders. Further clinical and patient education information relating to PID can be viewed at www.idfnz.org.nz ; IDFNZ also offers a wide range of printed Pamphlets and booklets which can be requested for free.